

# DARIO GJORGJEVSKI

## Curriculum vitae

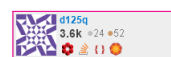
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\$ FPR='744A4F0B4F1C9371'  
\$ gpg --recv-keys "\$FPR"

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## 1 Experience

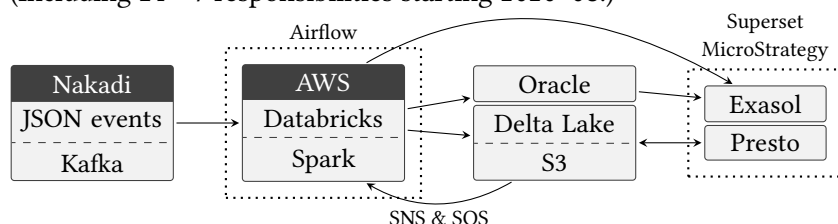
### Data Engineer

Zalando SE

2019-09/

Berlin, DE

Part of the team handling Zalando SE's *core data*: articles and sales.  
(Including  $24 \times 7$  responsibilities starting 2020-08.)



### Data Engineer

SO1 GmbH

2018-07/2019-09

Berlin, DE

- Responsible for a self-hosted Vertica on Azure:
  - Defined *data vault* and *dimensional* models of client data.
  - Developed ETL processes to ingest data from Blob Storage, Kafka, and SFTP servers.
  - Wrote and optimized queries to monitor KPIs and to compute features for machine learning models.
  - Implemented user-defined extensions to evaluate machine learning models (e.g., LightGBM) directly inside Vertica.
- Translated business rules to *minimum cost maximum flow* problems, yielding 15 % greater value than previous greedy algorithms.
- Developed a microservice for top- $k$  nearest neighbor queries in real time by utilizing *locality-sensitive hashing* with *MinHash* signatures.

### Data Scientist

Infinite Analytics, Inc.

2017-11/2018-06

Skopje, MK

- Scraped clients' websites using Scrapy.
- Developed a Spark application to compute and visualize *actionable insights* using over 2 billion facts about 50 million customers.

### Research Intern

EPFL, LCA2

2017-07/09

Lausanne, CH

- Implemented software agents with *asyncio* and *Mininet* in **T-RECS**.
- Modeled smart grid power traces at a timescale of 20 ms using approaches based on wavelets and long-range dependence.
- Increased the resolution of mean-aggregated measurements using deep learning for super-resolution.

### Research Intern

EPFL, LASEC

2016-06/09

Lausanne, CH

Studied and improved upon the complexity of state-of-the-art solving algorithms for the *Learning With Errors* (LWE) problem.

## 2 Strengths

### 2.1 Theoretical Knowledge

- Algorithms
- Data structures

- Probability theory
- Statistics

- Databases
- Distributed systems
- Big data

Linear algebra

Cryptography

Additional academic exposure to *compiler design* and *programming language theory* along with various Lisps, Haskell, and Standard ML.

### 2.2 Hands-On Experience

- Python
- R incl. *Tidyverse*
- SQL & PL/SQL
- Scala

- Spark
- Kafka
- Airflow
- Redis
- ELK stack

- GNU/Linux
- AWS
  - EC2
  - S3
  - Lambda
  - SNS & SQS
  - CloudFormation
- Databricks

LaTeX incl. TikZ/PGF

Computer algebra

Adept at working in *agile teams* using Git for (distributed) version control, and Jenkins for CI/CD.

## 3 Honors

- Graduated *summa cum laude* with a perfect GPA from the Ss. Cyril and Methodius University.
- Best student paper for [2].
- Scholarships to attend the 2016 and 2017 editions of the Summer School on Real-World Crypto and Privacy held in Šibenik, Croatia.
- Dean's list at the Ss. Cyril and Methodius University – awarded to the top 2.5 % – throughout the entire duration of study.

## 4 Education

### Computer Science & Engineering (B.Sc.)

Class of 2017

Ss. Cyril and Methodius University

Skopje, MK

Thesis: “Error-Correcting Codes in the Rank Metric” [1].

Publications: [2, 3].

GPA of 10.00; scale from 5 (E/F) to 10 (A).

Earned 240 ECTS credits. As a senior, conducted computational exercises, homework assignments, and exams in:

*Linear Algebra* Least squares, linear codes, and low-rank approximations in SAGEMATH and Mathematica®.

*Statistics* Data visualization, Monte Carlo methods, inference, hypothesis testing, and linear regression in R.

*Databases* ER models, relational algebra, and ANSI SQL.

Presentations available at [🔗/Presentations](#).

Over 40 *Massive Open Online Courses* on topics related to game theory, probabilistic graphical models, Bayesian statistics, combinatorics, automata and formal languages, mathematical optimization, etc.

Certifications available at [🔗/Personal/tree/master/Certifications](#).

## 5 Theses

- [1] **DARIO GJORGJEVSKI**. “Error-Correcting Codes in the Rank Metric.” With Applications to Cryptography. Bachelor’s Thesis. Under sup. of Simona Samardjiska. Ss. Cyril and Methodius University, Jan. 24, 2018. eprint: <http://diplomski.finki.ukim.mk/Upload/PublicFile/1814>.

## 6 Publications

- [2] **DARIO GJORGJEVSKI**. “Combining LWE-Solving Algorithms.” In: *Proceedings of the 14th International Conference on Informatics and Information Technologies* (Hotel Bistra, Mavrovo, Macedonia, Apr. 7–9, 2017). Ed. by Aleksandra Popovska–Mitrovikj, Biljana Tojtovska, and Kire Trivodaliev. 2017, pp. 165–170. ISBN: 978-608-4699-07-1. eprint: <http://ciit.finki.ukim.mk/data/papers/CIIT2017.pdf>.
- [3] **DARIO GJORGJEVSKI** and Dejan Gjorgjevikj. “Using Distributed Representations to Identify Genders and Age Groups of Twitter Users.” In: *Proceedings of the 15th International Conference on Informatics and Information Technologies* (Hotel Bistra, Mavrovo, Macedonia, Apr. 20–22, 2018). Ed. by Nataša Ilievska and Georgina Mirčeva. 2018, pp. 2–7. ISBN: 978-608-4699-08-8. eprint: <http://ciit.finki.ukim.mk/data/papers/CIIT2018.pdf>.

## 7 Projects

### C-like language → PostScript transpiler

Transpiler implemented in Flex and GNU Bison to translate a C-like language for *turtle graphics* to PostScript.

### Trusted timestamping

Flask application for a simple file-sharing service which also provides *trusted timestamps* as specified in RFC3161 and implemented in OpenSSL.

### AS-level robustness of the Internet over time

Simulation of random and targeted attacks on the Internet topology. Jupyter Notebook and source code available at [🔗/Internet\\_Robustness](#).

### Predicting readmission of diabetic patients

- Learning from imbalanced data using `mlr`.
- *Fully reproducible reporting* using `knitr`.

Report available at [🔗/Diabetic\\_Patients](#).

### Survey of the MinRank problem

SAGEMATH implementations of:

- Algorithms for solving MinRank; and a
- Zero-knowledge authentication protocol based on MinRank.

Report available at [🔗/MinRank](#).

### Checksum verification on LPC1769

C program to verify MD5 checksums of payloads stored on an LPC1769 microcontroller. Won prize for highest throughput. Source code available at [🔗/DMA\\_Workshop](#).

### Substitution ciphers for Macedonian text

- Create substitution ciphers; and
- Break substitution ciphers using Markov chain Monte Carlo (MCMC) methods based on unigram and bigram frequencies.

Mathematica® Notebook and corpus with Macedonian text suitable for frequency analysis available at [🔗/Macedonian\\_Substitution\\_Ciphers](#).